

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF THE CLAIMS:

1-15. (Canceled).

16. (Currently Amended) A simulation system for computer-implemented simulation and verification of a control system under development, comprising:

a simulation host-target architecture;

~~a simulation target operatively connected to the simulation host~~, wherein ~~[[an]] a real-time operating system of the simulation~~ a target of the host-target architecture, the target representing at least a part of the control system, is reconfigured by the simulation host of the host-target architecture via a first application programming interface associated with the real-time operating system of the simulation target, so as to dynamically reconfigure at least one of the following real-time-properties of the real time operation system:

a kind of task, including at least one of a periodic task, an ISR task, a task invoked by software, and a task occurring upon application mode initialization,

a task priority and a scheduling mode, which includes one of a cooperative mode, a pre-emptive mode, and a non-pre-emptivable mode,

a task period and a task offset,

a task deadline and a maximum number of activations,

a content of the task, the content including processes within the task and their order, and application modes of the operating system,

resources, alarms, and counters,

I/O configuration and network management, and

events and messages for communication and for an association thereof.

17. (Canceled).

18. (Currently Amended) ~~[[A]]~~ The simulation system according to claim ~~[[17]]~~ 16, wherein the operating system is reconfigured after downloading an executable software onto the target, ~~whereby~~ so that a real-time behavior of a software of the simulation target is one of defined and altered.

19. (Currently Amended) ~~[[A]]~~ The simulation system according to claim 16, wherein the first application programming interface associated with the operating system is a part of the operating system.

20. (Currently Amended) ~~[[A]]~~ The simulation system according to claim 16, further comprising:

a second application programming interface associated with the operating system, wherein the second application programming interface associated with the operating system is a part of the operating system;

wherein the first application programming interface associated with the operating system is not part of the operating system.

21. (Currently Amended) ~~[[A]]~~ The simulation system according to claim 16, wherein the simulation host includes at least one modeling tool, and wherein a software of the control system is executed on the simulation target.

22. (Currently Amended) ~~[[A]]~~ The simulation system according to claim 21, further comprising:

a target server for connecting the at least one modeling tool with the simulation target.

23. (Currently Amended) ~~[[A]]~~ The simulation system according to claim 22, wherein the target server includes a protocol driver of a communication protocol used for communication with the simulation target.

24. (Currently Amended) ~~[[A]]~~ The simulation system according to claim 16, further comprising:

a plurality of simulation process modules with corresponding memory modules and interface modules, wherein the simulation process modules represent distinct memory locations for facilitating inter-module communications.

25. (Currently Amended) [[A]] The simulation system according to claim 16, wherein the computer-implemented simulation is performed by executing a control system simulation model, and wherein the control system simulation model includes a plurality of sub-models executed on the corresponding plurality of simulation process modules.

26. (Currently Amended) [[A]] The simulation system according to claim 16, wherein at least some of the simulation process modules are dynamically reconfigurable by communication via the distinct memory locations.

27. (Currently Amended) A host unit for a simulation system for computer-implemented simulation and verification of a control system under development, the simulation system having a host-target architecture, comprising:

a simulation host, wherein the simulation host is of the host-target architecture ~~operatively connected to a simulation target, and~~ wherein [[an]] a real-time operating system of the simulation a target of the host-target architecture, the target representing at least a part of the control system, is reconfigured by the simulation host of the host-target architecture via a first application programming interface associated with the real-time operating system of the simulation target, so as to dynamically reconfigure at least one of the following real-time-properties of the real time operation system:

a kind of task, including at least one of a periodic task, an ISR task, a task invoked by software, and a task occurring upon application mode initialization,

a task priority and a scheduling mode, which includes one of a cooperative mode, a pre-emptive mode, and a non-pre-emptivable mode,

a task period and a task offset,

a task deadline and a maximum number of activations,

a content of the task, the content including processes within the task and their order, and application modes of the operating system,

resources, alarms, and counters,

I/O configuration and network management, and
events and messages for communication and for an association thereof.

28. (Currently Amended) A computer-implemented method for simulating and verifying a control system under development, comprising:

providing a host-target architecture ~~simulation host operatively connected to a simulation target~~; and

reconfiguring ~~[[an]]~~ a real-time operating system of ~~the simulation~~ a target of the host-target architecture, the target representing at least a part of the control system, by the ~~simulation host of the host-target architecture~~ via a first application programming interface associated with the real-time operating system of the ~~simulation~~ target, so as to dynamically reconfigure at least one of the following real-time-properties of the real time operation system:

a kind of task, including at least one of a periodic task, an ISR task, a task invoked by software, and a task occurring upon application mode initialization,

a task priority and a scheduling mode, which includes one of a cooperative mode, a pre-emptive mode, and a non-pre-emptivable mode,

a task period and a task offset,

a task deadline and a maximum number of activations,

a content of the task, the content including processes within the task and their order, and application modes of the operating system,

resources, alarms, and counters,

I/O configuration and network management, and

events and messages for communication and for an association thereof.

29. (Currently Amended) A computer-readable storage medium for storing a computer program that performs, when executed on a computer, a method for simulating and verifying a control system under development, the method comprising:

providing a host-target architecture ~~simulation host operatively connected to a simulation target~~; and

reconfiguring ~~[[an]]~~ a real-time operating system of the simulation a target of the host-target architecture, the target representing at least a part of the control system, by the simulation host of the host-target architecture via a first application programming interface associated with the real-time operating system of the simulation target, so as to dynamically reconfigure at least one of the following real-time-properties of the real time operation system:

a kind of task, including at least one of a periodic task, an ISR task, a task invoked by software, and a task occurring upon application mode initialization,

a task priority and a scheduling mode, which includes one of a cooperative mode, a pre-emptive mode, and a non-pre-emptivable mode,

a task period and a task offset,

a task deadline and a maximum number of activations,

a content of the task, the content including processes within the task and their order, and application modes of the operating system,

resources, alarms, and counters,

I/O configuration and network management, and

events and messages for communication and for an association thereof.

30. (New) The simulation system according to claim 16, wherein the cross-bar switch replicates data under real time conditions.

31. (New) The simulation system according to claim 16, wherein the cross-bar switch copies values of output signals to communication variables after reaching a consistent state.

32. (New) The simulation system according to claim 31, wherein the cross-bar switch passes the values of output signals before the respective process modules continue computation.

33. (New) The simulation system according to claim 20, wherein the simulation host includes at least one modeling tool, and wherein a software of the control system is executed on the simulation target.

34. (New) The simulation system according to claim 33, further comprising:

a target server for connecting the at least one modeling tool with the simulation target.

35. (New) The simulation system according to claim 34, wherein the target server includes a protocol driver of a communication protocol used for communication with the simulation target.